IN THE CLAIMS:

1. (Original) A battery comprising

a cathode and a cathode compartment containing as an oxidant a compound comprising at least one neutral, positive, or negative increased binding energy hydrogen species, and at least one other element;

an anode and an anode compartment containing a reductant; and

a salt bridge completing a circuit between the cathode compartment and the anode compartment.

2. (Original) A battery according to claim 1 wherein the increased binding energy hydrogen species comprises an increased binding energy hydride ion.

3. (Original) A battery of claim 2 wherein said oxidant comprises a cation M^{n+}, where n is an integer, bound to at least one increased binding energy hydride ion such that the binding energy of the cation $M^{(n-1)+}$ is less than the binding energy of the increased binding energy hydride ion.

4. (Original) A battery of claim 2 wherein said oxidant comprises a cation and an increased binding energy hydride ion selected such that the hydride ion is not oxidized by the cation.

5. (Original) A battery of claim 2 wherein said oxidant is represented by the formula $M^{n+}\,H^{-}\left(\frac{1}{p}\right)_{n}$ wherein M^{n+} is a cation and n is an integer, and $H^{-}\left(\frac{1}{p}\right)$ represents an increased binding energy hydride ion where p is an integer greater than 1 and where hydride ion is selected such that its binding energy is greater than the binding energy of the cation $M^{(n-1)+}$.

6. (Original) A battery of claim 4 wherein said oxidant comprises a stable cation-hydride ion compound, wherein the reduction potential of the cathode half reaction of the battery is determined by the binding energies of the cation and the hydride ion of the oxidant.

7. (Original) A battery of claim 6 wherein said oxidant is an increased binding energy hydrogen compound comprising an increased binding energy hydrogen molecular ion bound to an increased binding energy hydride ion where the hydride ion is selected such that its binding energy is greater than the binding energy of the reduced increased binding energy hydrogen molecular ion.

8. (Original) A battery of claim 7 wherein said oxidant is the compound represented by the formula $H_2^*\left[2c' = \frac{2a_o}{p}\right]^+ H^-(1/p')$, where $H_2^*\left[2c' = \frac{2a_o}{p}\right]^+$ represents a hydrogen molecular ion and $H^-(1/p')$ represents an increased binding energy hydride ion where p is 2 and p' is selected from the group consisting of 13, 14, 15, 16, 17, 18, or 19.

9. (Original) A battery of claim 6 wherein said oxidant has the formula $He^{2+}(H^-(1/p))_2$, where p is from 11 to 20.

10. (Original) A battery of claim 6 wherein said oxidant has the formula $Fe^{4+}(H^-(1/p))_4$ where p is from 11 to 20.

11. (Original) A battery of claim 2 wherein the increased binding energy hydride ion completes the circuit during the battery operation by migrating from the cathode compartment to the anode compartment through the salt bridge.

12. (Original) A battery of claim 2 wherein the salt bridge comprises at least one of an anion conducting membrane or an anion conductor.

13. (Original) A battery of claim 12 wherein the salt bridge is formed from a zeolite; a lanthanide boride MB_6, where M is a lanthanide; or an alkaline earth boride $M'B_6$ where M' is an alkaline earth.

14. (Original) A battery of claim 2 wherein the cathode compartment contains a reduced oxidant and the anode compartment contains an oxidized reductant and an ion capable of migrating from the anode compartment to the cathode compartment to complete the circuit whereby said battery is rechargeable.

15. (Original) A battery of claim 14 wherein the ion capable of migrating is the increased binding energy hydride ion.

16. (Original) A battery of claim 14 wherein the oxidant compound is capable of being generated by the application of a voltage to the battery.

17. (Original) A battery of claim 16 wherein the voltage is from about one volt to about 100 volts per cell.

18. (Original) A battery of claim 14 wherein the oxidant is represented by the formula $M^{n+} H^{-}\left(\frac{1}{p}\right)_n$ where $H^{-}\left(\frac{1}{p}\right)$ is an increased binding energy hydride ion where p is an integer greater than 1 and M^{n+} is a cation selected such that the n-th ionization energy IP_n of formation of the cation M^{n+} from the cation $M^{(n-1)+}$, where n is an integer, is less than the binding energy of the hydride ion.

19. (Original) A battery of claim 14 wherein the reduced oxidant is iron metal, and the oxidized reductant comprising the increased binding energy hydride ion is potassium hydride ($K^{+}H^{-}(1/p)$), where $H^{-}\left(\frac{1}{p}\right)$ represents said hydride ion where p is an integer greater than 1.

20. (Original) A battery of claim 16 wherein the reduced oxidant is (Fe) which goes to the oxidation state (Fe^{4+}) to form the oxidant ($Fe^{4+}(H^{-}(n=1/p))_4$) where $H^{-}\left(\frac{1}{p}\right)$ is an increased binding energy hydride ion where p is an integer from 11 to 20, the oxidized reductant is (K^{+}) which goes to the oxidation state (K) to form the reductant potassium metal, and the hydride ion completes the circuit by migrating from the anode compartment to the cathode compartment through the salt bridge upon application of a proper voltage.

21. (Original) A battery of claim 2 wherein the cathode compartment functions as the cathode.

22. (Previously Presented) An electrolytic cell for preparing increased binding energy

hydrogen compounds, said cell comprising:

a vessel containing

a cathode,

an anode,

an electrolyte having an increased binding energy hydride ion as an anion, and

an electrolytic solution containing the electrolyte and in contact with the cathode and the anode.

23. (Original) A cell of claim 22 wherein the increased binding energy hydrogen compounds produced by the cell are Zintl phase silicides or silanes, and said compounds are prepared without the decomposition of the anion, the electrolyte, or the electrolytic solution.

24. (Original) A cell of claim 22 being capable of operating at a desired voltage without decomposition of the increased binding energy hydride ion.

25. (Original) A cell of claim 22 wherein the increased binding energy hydrogen compounds produced comprise a cation M^{n+}, where n is an integer, and wherein the increased binding energy hydride ion $H^{-}\left(\frac{1}{p}\right)$, where p is an integer greater than 1, is selected such that its binding energy is greater than the binding energy of the cation $M^{(n-1)+}$.

26. (Original) A cell of claim 22 wherein the increased binding energy hydrogen compounds produced comprise a cation formed at a selected voltage such that the n-th ionization energy IP_n of the formation of the cation M^{n+} from $M^{(n-1)+}$, where n is an integer, is less than the binding energy of the increased binding energy hydride ion $H^{-}\left(\frac{1}{p}\right)$, where p is an integer greater than 1.

27. (Original) A cell of claim 22 wherein the increased binding energy hydrogen compounds produced comprise an increased binding energy hydride ion which is selected for a desired cation such that the hydride ion is not oxidized by the cation.

28. (Original) A cell of claim 27 wherein the cation is either of He^{2+} or Fe^{4+}, and the increased binding energy hydride ion is $H^{-}\left(\frac{1}{p}\right)$ where p is from 11 to 20.

Claims 29-37 (Cancelled)

38. (Previously Presented) A battery according to claim 1, wherein said compound comprises at least one increased binding energy hydride ion having a binding energy greater than 0.8 eV and at least one other element.

39. (Previously Presented) A battery according to claim 1, wherein said compound comprises at least one increased binding energy hydrogen atom having a binding energy of about $13.6/n^2$ eV, wherein n is a fraction whose numerator is 1 and denominator is an integer greater than 1 and at least one other element.

40. (Previously Presented) A battery according to claim 1, wherein said compound comprises at least one increased binding energy molecular hydrogen ion having a first binding energy of about $16.4/n^2$ eV, wherein n is a fraction whose numerator is 1 and denominator is an integer greater than 1, and at least one other element.

41. (Previously Presented) A battery according to claim 1, wherein said compound comprises:

(a) at least one neutral, positive or negative increased binding energy hydrogen species having a binding energy:

(i) greater than the binding energy of the corresponding ordinary hydrogen species, or

(ii) greater than the binding energy of any hydrogen species for which the corresponding ordinary hydrogen species is

unstable or is not observed because the ordinary hydrogen species' binding energy is less than thermal energies at ambient conditions, or is negative; and

(b) at least one other element, wherein said increased binding energy hydrogen species is selected from the group consisting of H_n, H_n^-, and H_n^+, where n is an integer, and n is greater than 1 when H has a positive charge.

42. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound further comprises one or more cations.

43. (Previously Presented) A battery according to claim 42, wherein the cation is a proton.

44. (Previously Presented) A battery according to claim 42, wherein the cation is the ion H_3^+.

45. (Previously Presented) A battery according to any one of claims 38-41, wherein said at least one other element comprises at least one selected from the group consisting of ions and compounds containing an increased binding energy species.

46. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound further comprises one or more normal hydrogen atoms.

47. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound further comprises one or more normal hydrogen molecules.

48. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula selected from the group of formulae consisting of

MH, MH_2, and M_2H_2 wherein M is an alkali cation and H is selected from the group consisting of increased binding energy hydride ions, hydrino atoms and dihydrino molecules.

49. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula MH_n wherein n is 1 or 2, M is an alkaline earth cation and H is selected from the group consisting of increased binding energy hydride ions and hydrino atoms.

50. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula MHX wherein M is an alkali cation, X is one of a neutral atom, a molecule, or a singly negatively charged anion, and H is elected from the group consisting of increased binding energy hydride ions and hydrino atoms.

51. (Previously Presented) A battery according to claim 50, wherein said singly negatively charged anion is selected from the group consisting of halogen ions, hydroxide ions, hydrogen carbonate ions, and nitrate ions.

52. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula MHX wherein M is an alkaline earth cation, X is a singly negatively charged anion, and H is selected from the group consisting of increased binding energy hydride ions and hydrino atoms.

53. (Previously Presented) A battery according to claim 52, wherein said singly negatively charged anion is selected from the group consisting of halogen ions, hydroxide ions, hydrogen carbonate ions, and nitrate ions.

54. (Previously Presented) A battery according to any one of claims 38-41, wherein

the compound has the formula MHX wherein M is an alkaline earth cation, X is a doubly negatively charged anion, and H is a hydrino atom.

55. (Previously Presented) A battery according to claim 54, wherein said doubly negatively charged anion is selected from the group consisting of carbonate ions and sulfate ions.

56. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula M_2HX wherein M is an alkali cation, X is a singly negatively charged anion, and H is selected from the group consisting of increased binding energy hydride ions and hydrino atoms.

57. (Previously Presented) A battery according to claim 56, wherein said singly negatively charged anion is selected from the group consisting of halogen ions, hydroxide ions, hydrogen carbonate ions, and nitrate ions.

58. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula MH_n wherein n is an integer from 1 to 5, M is an alkali cation and the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

59. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula M_2H_n wherein n is an integer from 1 to 4, M is an alkaline earth cation and the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

60. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula M_2XH_n wherein n is an integer from 1 to 3, M is an alkaline earth cation, X is a singly negatively charged anion, and the hydrogen

content H_n comprises at least one increased binding energy hydrogen species.

61. (Previously Presented) A battery according to claim 60, wherein said singly negatively charged anion is selected from the group consisting of halogen ions, hydroxide ions, hydrogen carbonate ions, and nitrate ions.

62. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula $M_2X_2H_n$ wherein n is 1 or 2, M is an alkaline earth cation, X is a singly negatively charged anion, and the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

63. (Previously Presented) A battery according to claim 62, wherein said singly negatively charged anion is selected from the group consisting of halogen ions, hydroxide ions, hydrogen carbonate ions, and nitrate ions.

64. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula M_2X_3H wherein M is an alkaline earth cation, X is a singly negatively charged anion, and H is selected from the group consisting of increased binding energy hydride ions and hydrino atoms.

65. (Previously Presented) A battery according to claim 64, wherein said singly negatively charged anion is selected from the group consisting of halogen ions, hydroxide ions, hydrogen carbonate ions, and nitrate ions.

66. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula M_2XH_n wherein n is 1 or 2, M is an alkaline earth cation, X is a doubly negatively charged anion, and the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

67. (Previously Presented) A battery according to claim 66, wherein said singly negatively charged anion is selected from the group consisting of halogen ions, hydroxide ions, hydrogen carbonate ions, and nitrate ions.

68. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula $M_2XX'H$ wherein M is an alkaline earth cation, X is a singly negatively charged anion, X' is a doubly negatively charged anion, and H is selected from the group consisting of increased binding energy hydride ions and hydrino atoms.

69. (Previously Presented) A battery according to claim 68, wherein said singly negatively charged anion is selected from the group consisting of halogen ions, hydroxide ions, hydrogen carbonate ions, and nitrate ions.

70. (Previously Presented) A battery according to claim 68, wherein said doubly negatively charged anion is selected from the group consisting of carbonate ions and sulfate ions.

71. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula $MM'H_n$ wherein n is and integer from 1 to 3, M is an alkaline earth cation, M' is an alkali metal cation, and the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

72. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound is $MM'XH_n$ wherein n is 1 to 2, M is an alkaline earth cation, M' is an alkali metal cation, X is a singly negatively charged anion, and the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

73. (Previously Presented) A battery according to claim 72, wherein said singly

negatively charged anion is selected from the group consisting of halogen ions, hydroxide ions, hydrogen carbonate ions, and nitrate ions.

74. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound is MM'XH where M is an alkaline earth cation, M' is an alkali metal cation, X is a doubly negatively charged anion, and H is selected from the group consisting of increased binding energy hydride ions and hydrino atoms.

75. (Previously Presented) A battery according to claim 74, wherein said singly negatively charged anion is selected from the group consisting of halogen ions, hydroxide ions, hydrogen carbonate ions, and nitrate ions.

76. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula MM'XX'H where M is an alkaline earth cation, M' is an alkali metal cation, X and X' are each a singly negatively charged anion, and H is selected from the group consisting of increased binding energy hydride ions and hydrino atoms.

77. (Previously Presented) A battery according to claim 76, wherein said singly negatively charged anion is selected from the group consisting of halogen ions, hydroxide ions, hydrogen carbonate ions, and nitrate ions.

78. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula H_nS wherein n is 1 or 2, and the hydrogen content of H_n comprises at least one increased binding energy hydrogen species.

79. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula $MSiH_n$ wherein n is an integer from 1 to 6, M is an alkali or alkaline earth cation, and the hydrogen content of H_n comprises at least

one increased binding energy hydrogen species.

80. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula $MXM'H_n$ wherein

n is an integer from 1 to 5;

M is an alkali or alkaline earth cation;

X is a singly negatively charged anion or a doubly negatively charged anion;

M' is selected from the group consisting of Si, Al, Ni, the transition elements, the inner transition elements, and the rare earth elements; and

the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

81. (Previously Presented) A battery according to claim 80, wherein said singly negatively charged anion is selected from the group consisting of halogen ions, hydroxide ions, hydrogen carbonate ions, and nitrate ions.

82. (Previously Presented) A battery according to claim 80, wherein said doubly negatively charged anion is selected from the group consisting of carbonate ions and sulfate ions.

83. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula $MAlH_n$ wherein n is an integer from 1 to 6, M is an alkali or alkaline earth cation, and the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

84. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula MH_n wherein:

n is an integer from 1 to 6;

M is selected from the group consisting of the transition elements, the inner transition elements, and the rare earth element cations and nickel; and

the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

85. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula $MNiH_n$ wherein:

n is an integer from 1 to 6;

M is selected from the group consisting of alkali cations, alkaline earth cations, silicon, and aluminum; and

the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

86. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula $MM'H_n$ wherein:

n is an integer from 1 to 6;

M is selected from the group consisting of alkali cations, alkaline earth cations, silicon, and aluminum;

M' is selected from the group consisting of the transition elements, the inner transition elements, and rare earth element cations; and

the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

87. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula M_2SiH_n wherein n is an integer from 1 to 8, M is an alkali or alkaline earth cation, and the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

88. (Previously Presented) A battery according to any one of claims 38-41, wherein

the compound has the formula Si_2H_n wherein n is an integer from 1 to 8, and the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

89. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula SiH_n wherein n is an integer from 1 to 8, and the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

90. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula TiH_n wherein n is an integer from 1 to 4, and the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

91. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula Al_2H_n wherein n is an integer from 1 to 4 and the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

92. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula $MXAlX'H_n$ wherein n is 1 or 2, M is an alkali or alkaline earth cation, X and X' are each either a singly negatively charged anion or a doubly negatively charged anion, and the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

93. (Previously Presented) A battery according to claim 92, wherein said singly negatively charged anion is selected from the group consisting of halogen ions, hydroxide ions, hydrogen carbonate ions, and nitrate ions.

94. (Previously Presented) A battery according to claim 92, wherein said doubly negatively charged anion is selected from the group consisting of carbonate ions and sulfate ions.

95. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula $MXSiX'H_n$ wherein n is 1 or 2, M is an alkali or alkaline earth cation, X and X' are each either a singly negatively charged anion or a doubly negatively charged anion, and the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

96. (Previously Presented) A battery according to claim 95, wherein said singly negatively charged anion is selected from the group consisting of halogen ions, hydroxide ions, hydrogen carbonate ions, and nitrate ions.

97. (Previously Presented) A battery according to claim 95, wherein said doubly negatively charged anion is selected from the group consisting of carbonate ions and sulfate ions.

98. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula SiO_2H_n wherein n is an integer from 1 to 6 and the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

99. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula $MSiO_2H_n$ wherein n is an integer from 1 to 6, M is an alkali or alkaline earth cation, and the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

100. (Previously Presented) A battery according to any one of claims 38-41, wherein

the compound has the formula MSi_2H_n wherein n is an integer from 1 to 6, M is an alkali or alkaline earth cation, and the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

101. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has the formula M_2SiH_n wherein n is an integer from 1 to 8, M is an alkali or alkaline earth cation, and the hydrogen content H_n comprises at least one increased binding energy hydrogen species.

102. (Previously Presented) A battery according to any one of claims 38-41, wherein said at least one other element comprises at least one selected from the group consisting of a proton, ordinary hydrogen atom, ordinary hydrogen molecules, ordinary hydrogen molecular ions and ordinary H_3^+.

103. (Previously Presented) A battery according to any one of claims 38-41, wherein said at least one other element comprises at least one element selected from the group consisting of alkaline earth metals and alkali metals.

104. (Previously Presented) A battery according to any one of claims 38-41, wherein said at least one other element comprises at least one element selected from the group consisting of organic compounds.

105. (Previously Presented) A battery according to any one of claims 38-41, wherein said at least one other element comprises at least one element selected from the group consisting of semiconductors.

106. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula $[KH_mKCO_3]_n$ wherein m and n are each an integer and the hydrogen content H_m of the compound comprises at least one increased

binding energy hydrogen species.

107. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula $[KH_mKNO_3]^+_n\ nX^-$ wherein m and n are each an integer, X is a singly negatively charged anion, and the hydrogen content of H_m of the compound comprises at least one increased binding energy hydrogen species.

108. (Previously Presented) A battery according to claims 107, wherein said singly negatively charged anion is selected from the group consisting of halogen ion, hydroxide ion, hydrogen carbonate ion, and nitrate ion.

109. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula $[KHKNO_3]_n$ wherein n is an integer and the hydrogen content H of the compound comprises at least one said binding energy hydrogen species.

110. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula $[KHKOH]_n$ wherein n is an integer and the hydrogen content H of the compound comprises at least one said binding energy hydrogen species.

111. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula $[MH_mM^1X]_n$ wherein m and n are each an integer, M and M^1 are each an alkali or alkaline earth cation, X is a singly or doubly negatively charged anion, and the hydrogen content H_m of the compound comprises at least one increased binding energy hydrogen species.

112. (Previously Presented) A battery according to claims 111, wherein said singly

negatively charged anion is selected from the group consisting of halogen ion, hydroxide ion, hydrogen carbonate ion, and nitrate ion.

113. (Previously Presented) A battery according to claim 111, wherein said doubly negative charged anion is selected from the group consisting of carbonate ion, oxide, and sulfate ion.

114. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula $[MH_mM^1X^1]^+_n\ nX^-$ wherein m and n are each an integer, M and M^1 are each an alkali or alkaline earth cation, X and X^1 are a singly or doubly negatively charged anion, and the hydrogen content H_m of the compound comprises at least one increased binding energy hydrogen species.

115. (Previously Presented) A battery according to claim 114, wherein said singly negatively charged anion is selected from the group consisting of halogen ion, hydroxide ion, hydrogen carbonate ion, and nitrate ion.

116. (Previously Presented) A battery according to claim 114, wherein said doubly negative charged anion is selected from the group consisting of carbonate ion, oxide, and sulfate ion.

117. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula $MXSiX^1H_n$ wherein n is 1 or 2, M is an alkali or alkaline earth cation, X and X^1 are with a singly negatively charged anion or a doubly negatively charged anion, and the hydrogen content H_n of the compound comprises at least one increased binding energy hydrogen species.

118. (Previously Presented) A battery according to claim 117, wherein said singly negatively charged anion is selected from the group consisting of halogen ion,

hydroxide ion, hydrogen carbonate ion, and nitrate ion.

119. (Previously Presented) A battery according to claim 117, wherein said doubly negative charged anion is selected from the group consisting of carbonate ion, oxide, and sulfate ion.

120. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula $MSiH_n$ wherein n is an integer from 1 to 6, M is an alkali or alkaline earth cation, and the hydrogen content H_n of the compound comprises at least one increased binding energy hydrogen species.

121. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula Si_nH_{4n} wherein n is an integer and the hydrogen content H_{4n} of the compound comprises at least one increased binding energy hydrogen species.

122. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula Si_nH_{3n} wherein n is an integer and the hydrogen content H_{3n} of the compound comprises at least one increased binding energy hydrogen species.

123. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula $Si_nH_{3n}O_m$ wherein n and m are integers and the hydrogen content H_{3n} of the compound comprises at least one increased binding energy hydrogen species.

124. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula $Si_xH_{4x-2y}O_y$ wherein x and y are each an integer and the hydrogen content H_{4x-2y} of the compound comprises at least one increased

binding energy hydrogen species.

125. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula $Si_xH_{4x}O_y$ wherein x and y are each an integer and the hydrogen content H_{4x} of the compound comprises at least one increased binding energy hydrogen species.

126. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula $Si_nH_{4n} \cdot H_2O$ wherein n is an integer and the hydrogen content H_{4n} of the compound comprises at least one increased binding energy hydrogen species.

127. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula Si_nH_{2n+2} wherein n is an integer and the hydrogen content H_{2n+2} of the compound comprises at least one increased binding energy hydrogen species.

128. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula $Si_xH_{2x+2}O_y$ wherein x and y are each an integer and the hydrogen content H_{2x+2} of the compound comprises at least one increased binding energy hydrogen species.

129. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula $Si_nH_{4n-2}O$ wherein n is an integer and the hydrogen content H_{4n-2} of the compound comprises at least one increased binding energy hydrogen species.

130. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula $MSi_{4n}H_{10n}O_n$ wherein n is an integer, M is an alkali

or alkaline earth cation, and the hydrogen content H_{10n} of the compound comprises at least one increased binding energy hydrogen species.

131. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula $MSi_{4n}H_{10n}O_{n+1}$ wherein n is an integer, M is an alkali or alkaline earth cation, and the hydrogen content H_{10n} of the compound comprises at least one increased binding energy hydrogen species.

132. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula $M_qSi_nH_mO_p$ wherein q, n, m, and p are integers, M is an alkali or alkaline earth cation, and the hydrogen content H_m of the compound comprises at least one increased binding energy hydrogen species.

133. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula $M_qSi_nH_m$ wherein q, n, and m are integers, M is an alkali or alkaline earth cation, and the hydrogen content H_m of the compound comprises at least one increased binding energy hydrogen species.

134. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula $Si_nH_mO_p$ wherein n, m, and p are integers, and the hydrogen content H_m of the compound comprises at least one increased binding energy hydrogen species.

135. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula Si_nH_m wherein n and m are integers, and the hydrogen content H_m of the compound comprises at least one increased binding energy hydrogen species.

136. (Previously Presented) A battery according to any one of claims 38-41, wherein

the compound has a formula $MSiH_n$ wherein n is an integer from 1 to 8, M is an alkali or alkaline earth cation, and the hydrogen content H_n of the compound comprises at least one increased binding energy hydrogen species.

137. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula Si_2H_n wherein n is an integer from 1 to 8, and the hydrogen content H_n of the compound comprises at least one increased binding energy hydrogen species.

138. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula SiH_n wherein n is an integer from 1 to 8, and the hydrogen content H_n of the compound comprises at least one increased binding energy hydrogen species.

139. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula SiO_2H_n wherein n is an integer from 1 to 6, and the hydrogen content H_n of the compound comprises at least one increased binding energy hydrogen species.

140. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula $MSiO_2H_n$ wherein n is an integer from 1 to 6, M is an alkali or alkaline earth cation, and the hydrogen content H_n of the compound comprises at least one increased binding energy hydrogen species.

141. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula MSi_2H_n wherein n is an integer from 1 to 14, M is an alkali or alkaline earth cation, and the hydrogen content H_n of the compound comprises at least one increased binding energy hydrogen species.

142. (Previously Presented) A battery according to any one of claims 38-41, wherein the compound has a formula M_2SiH_n wherein n is an integer from 1 to 8, M is an alkali or alkaline earth cation, and the hydrogen content H_n of the compound comprises at least one increased binding energy hydrogen species.

143. (Previously Presented) A battery according to claim 142, wherein said singly negatively charged anion is selected from the group consisting of halogen ion, hydroxide ion, hydrogen carbonate ion, and nitrate ion.

144. (Previously Presented) A battery according to claim 142, wherein said doubly negative charged anion is selected from the group consisting of carbonate ion, oxide, and sulfate ion.

145. (Previously Presented) A battery according to claim 41, wherein said increased binding energy hydrogen species is selected from the group consisting of (a) a hydride ion having a binding energy greater than the binding energy of the corresponding ordinary hydride ion for p = 2 up to 23 in which the binding energy is represented by

$$Binding\ Energy = \frac{\hbar^2\sqrt{s(s+1)}}{8\mu_e a_0^2\left[\frac{1+\sqrt{s(s+1)}}{p}\right]^2} - \frac{\pi\mu_0 e^2\hbar^2}{m_e^2 a_0^3}\left(1+\frac{2^2}{\left[\frac{1+\sqrt{s(s+1)}}{p}\right]^3}\right)$$

where p is an integer greater than 1, s = ½, ħ is Plank's constant bar, μ_0 is the permeability of vacuum, m_e is the mass of the electron, μ_e is the reduced electron mass, a_0 is the Bohr radius, and *e* is the elementary charge; (b) hydrogen atom having a binding energy greater than about 13.6 eV; (c) hydrogen molecule

having a first binding energy greater than about 15.5 eV; and (d) molecular hydrogen ion having a binding energy greater than about 16.4 eV.

146. (Previously Presented) A battery according to claim 41, wherein the increased binding energy species is hydride ion having a binding energy of about 3.0, 6.6, 11.2, 16.7, 22.8 29.3, 36.1, 42.8, 49.4, 55.5, 61.0, 65.6, 69.2, 71.53, 72.4, 71.54, 68.8, 64.0, 56.8, 47.1, 34.6, of 19.2.

147. (Previously Presented) A battery according to claim 41, wherein said increased binding energy hydrogen species is a hydride ion having a binding energy greater than the binding energy of the corresponding ordinary hydride ion for p = 2 up to 23 in which the binding energy is represented by

$$\textit{Binding Energy} = \frac{\hbar^2\sqrt{s(s+1)}}{8\mu_e a_0^2\left[\frac{1+\sqrt{s(s+1)}}{p}\right]^2} - \frac{\pi\mu_0 e^2\hbar^2}{m_e^2 a_0^3}\left(1+\frac{2^2}{\left[\frac{1+\sqrt{s(s+1)}}{p}\right]^3}\right)$$

where p is an integer greater than 1, s = ½, ħ is Plank's constant bar, μ_0 is the permeability of vacuum, m_e is the mass of the electron, μ_e is the reduced electron mass, a_0 is the Bohr radius, and *e* is the elementary charge.

148. (Previously Presented) A battery according to claim 41, wherein said increased binding energy hydrogen species is selected from the group consisting of (a) a hydrino atom having a binding energy of about 13.6 eV/$(1/p)^2$, where p is an integer greater than 1; (b) a hydride ion having a binding energy represented by

$$Binding\ Energy = \frac{\hbar^2\sqrt{s(s+1)}}{8\mu_e a_0^2\left[\frac{1+\sqrt{s(s+1)}}{p}\right]^2} - \frac{\pi\mu_0 e^2\hbar^2}{m_e^2 a_0^3}\left(1+\frac{2^2}{\left[\frac{1+\sqrt{s(s+1)}}{p}\right]^3}\right)$$

where p is an integer greater than 1, s = ½, ħ is Plank's constant bar, μ_0 is the permeability of vacuum, m_e is the mass of the electron, μ_e is the reduced electron mass, a_0 is the Bohr radius, and *e* is the elementary charge; (c) a trihydrino molecular ion, H_3^+ (1/p), having a binding energy of about $22.6/(1/p)^2$ eV; (d) an increased binding energy hydrogen molecule having a binding energy of about $15.5/(1/p)^2$ eV; and (e) an increased binding energy hydrogen molecular ion with a binding energy of about $16.4/(1/p)^2$ eV.

149. (Previously Presented) A battery according to claim 138, wherein p is 2 to 200.

150. (Previously Presented) A battery according to claim 38, wherein said hydride ion comprises an electron and a hydrino atom having a hydride binding energy represented by

$$Binding\ Energy = \frac{\hbar^2\sqrt{s(s+1)}}{8\mu_e a_0^2\left[\frac{1+\sqrt{s(s+1)}}{p}\right]^2} - \frac{\pi\mu_0 e^2\hbar^2}{m_e^2 a_0^3}\left(1+\frac{2^2}{\left[\frac{1+\sqrt{s(s+1)}}{p}\right]^3}\right)$$

where p is an integer greater than 1, s = ½, ħ is Plank's constant bar, μ_0 is the permeability of vacuum, m_e is the mass of the electron, μ_e is the reduced electron mass, a_0 is the Bohr radius, and *e* is the elementary charge.

151. (Previously Presented) A battery according to claim 150, wherein the binding energy is about 3 eV.

152. (Previously Presented) A battery according to claim 150, wherein the binding energy is about 7 eV.

153. (Previously Presented) A battery according to claim 150, wherein the binding energy is about 11 eV.

154. (Previously Presented) A battery according to claim 150, wherein the binding energy is about 17 eV.

155. (Previously Presented) A battery according to claim 150, wherein the binding energy is about 23 eV.

156. (Previously Presented) A battery according to claim 150, wherein the binding energy is about 29 eV.

157. (Previously Presented) A battery according to claim 150, wherein the binding energy is about 36 eV.

158. (Previously Presented) A battery according to claim 150, wherein the binding energy is about 43 eV.

159. (Previously Presented) A battery according to claim 150, wherein the binding energy is about 49 eV.

160. (Previously Presented) A battery according to claim 150, wherein the binding energy is about 55 eV.

161. (Previously Presented) A battery according to claim 150, wherein the binding energy is about 61 eV.

162. (Previously Presented) A battery according to claim 150, wherein the binding energy is about 66 eV.

163. (Previously Presented) A battery according to claim 150, wherein the binding energy is about 69 eV.

164. (Previously Presented) A battery according to claim 150, wherein the binding energy is about 71 eV.

165. (Previously Presented) A battery according to claim 150, wherein the binding energy is about 72 eV.

166. (Previously Presented) A battery comprising:

a cathode and a cathode compartment containing as an oxidant a compound comprising at least one increased binding energy hydride ion having a binding energy greater than 0.8 eV and at least one other element, wherein the compound is selected from the group consisting of KHF, KHCl, KHBr, KHI, RbHF, RrHCL, RbHBr, RbHI, CsHF, CsHCL, CsHBr, CsHI, CaHCl, CaHBr, CaHI, SrHF, SrHCL. SrHBr, and SiH;

an anode and an anode compartment containing a reductant; and

a salt bridge completing a circuit between the cathode compartment and the anode compartment.

167. (New) A battery according to claim 1, wherein the oxidant comprises SiH.